FREELIVING MARINE NEMATODES FROM THE INDIAN OCEAN

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SYNOPSIS

Thirteen species of freeliving marine nematodes collected by the Royal Society's 1963 expedition to the South-east Arabian upwelling region of the Indian Ocean are described. Twelve of these species are new, all being referable to existing genera. *Didelta cobbi* sp. nov. is closest to *D. maculatum* Cobb, 1920 and is distinguished from this species by the form of the amphids, and possibly the arrangement of cephalic setae. *Procamacolaimus papillosus* sp. nov. is similar to *P. dolichostylum* Gerlach, 1953, but has shorter cephalic setae, no subventral buccal teeth and a differently shaped gubernaculum. *Sphaerolaimus crenellatus* sp. nov. is characterized by the posterior position of its amphids, a buttressed cephalic capsule and double-jointed spicules. *Siphonolaimus profundus* sp. nov. is apparently similar to *S. gladiator* Wieser, 1956, but differs from it in the setal arrangement on the head, the longer buccal spear and the presence of pre-cloacal supplements in the male. *Desmodora masira* sp. nov. is characterized by a short broad perforate cephalic capsule, small amphids, a weakly armed buccal cavity, a long tail and no male supplements. *Sabatieria alata* sp. nov. is very close to *S. furcillata* Wieser, 1954, but has a larger overall size, shorter cephalic setae, smaller amphids and a different spicule structure. *Hopperia muscatensis* sp. nov. is distinct from the type and only other species *H. massiliensis* Vitiello, 1969, in having longer cephalic setae, a shorter tail and differently shaped spicules. *Platycomopsis implicatus* sp. nov. is separated from its nearest relative *P. dimorphica* Mawson, 1956, in the setal arrangement on the head, the smaller amphids, the structure of the spicules and the position of the pre-cloacal supplement. *Synonchus alisonae* sp. nov. is characterized by the very long filiform tail and relatively long cephalic setae. Specimens of *Dayellus dayi* Inglis, 1964, conform exactly with the type, but are slightly smaller in many of the measurements. *Crenopharynx fringilla* sp. nov. is characterized by the combination of a long flagellate tail, spicules with no barbs or other modifications and a gubernaculum with pointed lateral pieces. *Mesacanthion southerni* sp. nov. is very closely related to *M. diplechma* Southern, 1914, but comparison with specimens of this latter species from the North Sea reveal differences of specific rank mainly concerning the copulatory apparatus of the male. *Mesacanthion arabium* sp. nov. is very characteristic: it has long spicules, a paired L-shaped gubernaculum with raised ridges at the distal end and unique accessory organs associated with the vulva in the female.

INTRODUCTION

DURING June and July 1963 the Royal Society mounted a cruise on the R.R.S. "Discovery" to the South-east Arabian upwelling region as part of the International Indian Ocean Expedition. Details of the work undertaken and stations sampled are given in the Cruise Report (Royal Society, 1963). Benthic samples were taken with a 0·1 m^2 Smith-McIntyre grab down to depths of 3500 m and undisturbed sediment hauls were subsampled with a corer for meiofauna analysis. These cores are very rich in meiofauna, particularly nematodes, and

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their extraction and analysis on a quantitative basis are proving very time consuming, so that completion of this work is not expected for some time. However, samples for macrofauna analysis passed through coarser sieves have been found to contain many new and interesting nematodes in the larger size range, and it is these which are described here. The sampling stations where the " macrofaunal " nematodes were found are listed in Table 1, together with information on the sediment types and the sieve size used. A map showing the positions of the stations is given in Fig. 1, and the species found at these stations are listed in Table 2.

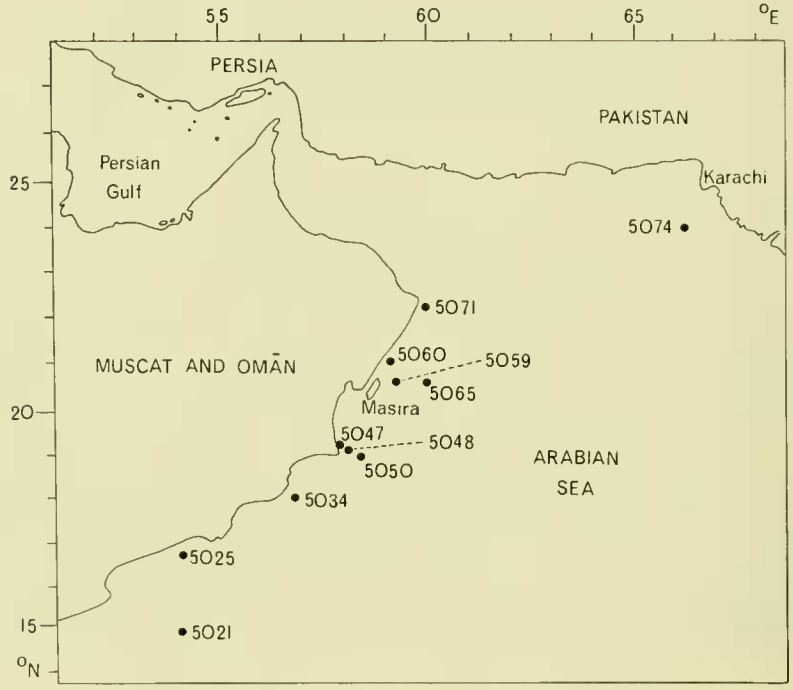

Fig. 1. Map showing positions of sampling stations.

Only species represented by at least one mature male specimen in good condition are described. Specimens have been mounted in glycerine for examination. Curved structures, e.g. spicules, are measured as the curve and not the chord, and head diameters are measured at the level of the anteriormost cephalic setae. Type-material is deposited at the British Museum (Natural History). When more than one specimen is available, descriptions are based on a syntypic series.

I am very grateful to Mr A. D. McIntyre of the Marine Laboratory, Aberdeen, for making this material available to me for study.

TABLE 1

Positions and other details of sampling stations

Date	Station no.	Position	Depth (m)	Sediment type	Sieve size
29.6.63	5021	14°55′N–53°55·4′E	2480	Greenish-grey mud	0·5 mm
30.6.63	5025	16°41′N–54°01·8′E	1030	Greenish fine sand	0·5 mm
5.7.63	5034	17°57·2′N–56°43·5′E	49	Fine sand	0·5 mm
10.7.63	5047	19°09·8′N–57°55·1′E	48	Fine muddy sand	0·5 mm
10.7.63	5048	19°03′N–58°02·8′E	120	Muddy sand	0·5 mm
10.7.63	5050	18°50′N–58°18·3′E	3147	Fine greyish-green mud	295 μ
15.7.63	5059	20°29·5′N–59°09·5′E	660	Greenish mud	295 μ
15.7.63	5060	21°03·5′N–59°04·1′E	50	Fine shelly sand	0·5 mm
16.7.63	5065	20°32·9′N–59°55·5′E	3500	Grey-green clay	295 μ
19.7.63	5071	22°12·9′N–59°54·3′E	1305	Greenish mud	295 μ
22.7.63	5074	23°57·0′N–66°08·0′E	182	Muddy sand with shells and some clay	0·5 mm

DESCRIPTIVE SECTION

Family **LINHOMOEIDAE**

Didelta cobbi sp. nov.

(Fig. 2)

MATERIAL STUDIED. 1 ♂ (Holotype); B.M. (N.H.), Reg. No. 1972 : 354.

REPRESENTATION. Station 5060.

DE MAN'S RATIOS.

	a	b	c	Body length (mm)
Male	106·00	19·91	9·81	4·24

MEASUREMENTS (in mm). Male: Body breadth : 0·040. Oesophagus length : 0·213. Distance of nerve-ring from anterior : 0·079. Distance of excretory pore from anterior : 0·092. Length of longer cephalic setae : 0·014. Length of shorter cephalic setae : 0·003. Length of anterior cervical setae : 0·005. Length of posterior cervical setae : 0·010. Length of amphid + plaque : 0·015. Breadth of amphid + plaque : 0·0135. Tail length : 0·432. Cloacal diameter : 0·038. Spicule length : 0·051. Length of gubernacular apophysis : 0·029.

DESCRIPTION. The body is filiform, and of almost uniform width between the nerve-ring and cloaca. The cuticle is marked with fine transverse striations. The head bears a circle of ten cephalic setae, of which six are much longer than the remaining four. Between the cephalic setae and the amphids is a circle of four cervical setae, and posterior to the amphids six longer setae (Fig. 2c). The amphids are oval in outline, and are mounted on oval cuticularized plaques. The region where the amphidal nerve joins the centre of the amphid has an opaque granular appearance. The buccal cavity has an anterior thin-walled cup-shaped chamber separated from the posterior more heavily cuticularized chamber by a

constriction. The oesophagus expands only slightly towards its base and is linked to the intestine by prominent cardia (Fig. 2b). The ventral excretory gland extends posteriorly to the level of the cardia.

TABLE 2

Distribution of species at the sampling stations

Station no.	Species	Numbers
5021	*Synonchus alisonae* sp. nov.	4 ♂♂, 2 ♀♀, 9 juveniles
5025	*Platycomopsis implicatus* sp. nov.	1 ♂
5034	*Mesacanthion southerni* sp. nov.	1 ♂, 3 ♀♀
	Mesacanthion arabium sp. nov.	4 ♂♂, 10 ♀♀
	Viscosia sp.	1 ♀
5047	*Dayellus dayi* Inglis, 1964	7 ♂♂, 5 ♀♀, 7 juveniles
	Crenopharynx fringilla sp. nov.	7 ♂♂, 9 ♀♀, 12 juveniles
	Mesacanthion southerni sp. nov.	5 ♂♂, 2 juveniles
5048	*Theristus* sp.	3 ♂♂, 1 ♀ } sample badly
	Cyatholaimidae sp.	2 ♀ } preserved ;
	Paranticoma sp.	1 ♀ } specimens in
	Unidentifiable	6 } poor condition
5050	*Siphonolaimus profundus* sp. nov.	4 ♂♂, 7 ♀♀, 2 juveniles
	Desmodoridae sp.	1 ♀
	Sabatieria alata sp. nov.	2 ♂♂, 5 ♀♀, 4 juveniles
	Paramesacanthion sp.	1 ♀, 4 juveniles
	Oncholaimidae spp.	1 ♂, 2 juveniles
5059	*Desmodora masira* sp. nov.	6 ♂♂, 7 ♀♀
	Sphaerolaimus crenellatus sp. nov.	7 ♂♂, 20 ♀♀
5060	*Didelta cobbi* sp. nov.	1 ♂
	Dayellus dayi Inglis, 1964	6 ♂♂, 13 ♀♀, 7 juveniles
	Crenopharynx fringilla sp. nov.	2 ♂♂, 1 ♀
	Oncholaimidae sp.	1 juvenile
5065	*Steineria* sp.	1 ♀
	Desmodora sp.	2 ♀♀
	Paramesacanthion sp.	2 ♀♀, 1 juvenile
5071	*Theristus* sp.	1 juvenile
	Sabatieria sp.	1 juvenile
	Hopperia muscatensis sp. nov.	1 ♂, 4 ♀♀
	Oncholaimidae sp.	1 juvenile
5074	*Procamacolaimus papillosus* sp. nov.	1 ♂
	Crenopharynx sp.	1 juvenile

The middle region of the body is devoid of setae. The tail is elongate with its distal two-thirds filiform. Numerous short setae are scattered ventrally immediately posterior to the cloaca, and longer setae are present at the junction of the conical and filiform sections of the tail (Fig. 2a).

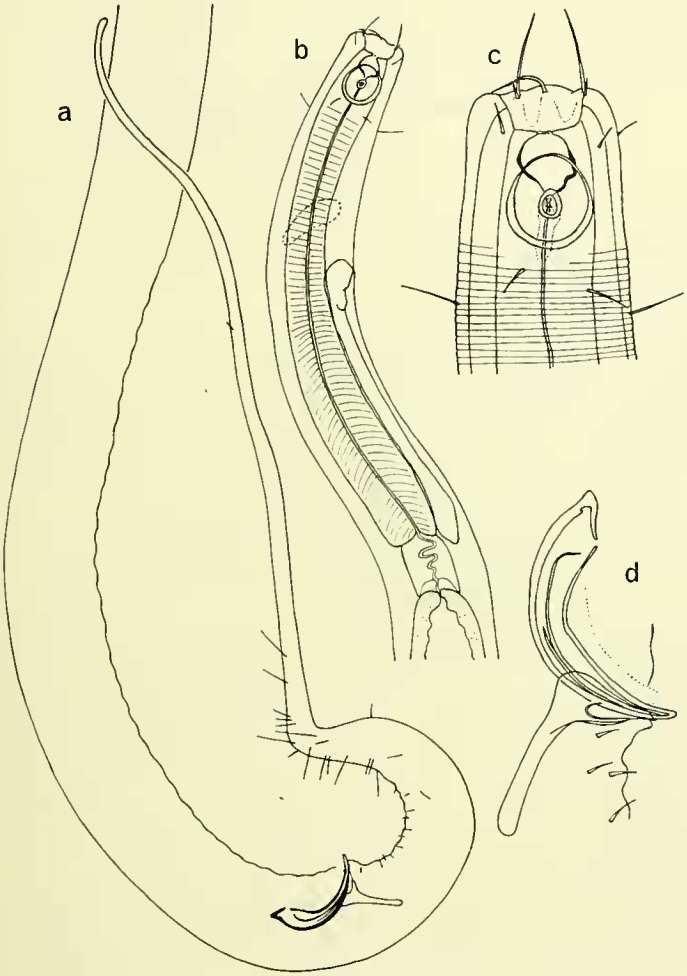

FIG. 2. *Didelta cobbi* sp. nov. a, Male tail. b, Anterior end of male. c, Lateral view of head. d, Lateral view of spicules and gubernaculum.

Male. The spicules are paired, equal and arcuate, with a median list. The gubernaculum bears long caudo-dorsal apophyses.

Discussion. Currently four species are referable to this genus; *Didelta maculatum* Cobb, 1920, *D. scutata* Wieser, 1956, *D. cascudum* Gerlach, 1956, and *D. scutellata* Vitiello, 1969a. The last three of these species all have relatively short cephalic setae (less than 8 μ). The present species is separated from *D. maculatum* mainly by the shape of the amphids, which in the latter are much more elongate with the cuticular plate triangular in shape. The lateral cephalic setae are short in *D. maculatum* but appear to be long in *D. cobbi*. However, this feature is not at all clear in the holotype, since these setae seem to be rather bent.

Family **CAMACOLAIMIDAE**

Procamacolaimus papillosus sp. nov.

(Fig. 3)

Material studied. 1 ♂ (Holotype); B.M. (N.H.), Reg. No. 1972 : 355.

Representation. Station 5074.

De Man's Ratios.

	a	b	c	Body length (mm)
Male	105·45	9·16	29·00	3·48

Measurements (in mm). Male : Body breadth : 0·033. Oesophagus length : 0·38. Excretory pore from anterior : 0·112. Proximal tip of ventral gland from base of oesophagus : 0·181. Head diameter : 0·012. Length of cephalic setae : 0·012. Amphid diameter : 0·0045. Tail length : 0·120. Cloacal diameter : 0·035. Spicule length : 0·051. Gubernaculum length : 0·027. Distance of pre-cloacal seta from cloaca : 0·023. Distance of posterior supplement from cloaca : 0·035. Distance of anterior supplement from cloaca : 0·28. Length of supplements : 0·021.

Description. The body is slender and elongate. The cuticle is marked throughout with rather coarse transverse striation. The mouth is surrounded by six rounded lips each bearing a short, stout, outwardly curving papilla. There are four relatively long cephalic setae. The buccal cavity is short and conical, and contains a solid styliform dorsal tooth opposed by a pair of pointed hollow subventral teeth. The amphids have a circular outline which is broken posteriorly for the exit of the amphidal nerve (Fig. 3b). The oesophagus is cylindrical, with no posterior swelling. The excretory pore is prominent and the ventral gland extends well beyond the base of the oesophagus. The tail is conical and bears two large rounded midventral papillae about half-way down its length. Smaller conical papillae are scattered generally over the surface of the tail (Fig. 3a).

Male. The spicules are paired, equal and arcuate. They expand in width gradually towards the proximal end, at which a rounded cephalization is set off by a constriction (Fig. 3c). Thin ventral spicular alae are present. The gubernaculum bears a strong rounded dorsal apophysis and triangular projections extending forwards on either side of the spicules. There is a stout pre-cloacal seta and nine strongly cuticularized pre-cloacal supplements. These are tubular, pointed distally and with their cephalate proximal ends again set off by a constriction.

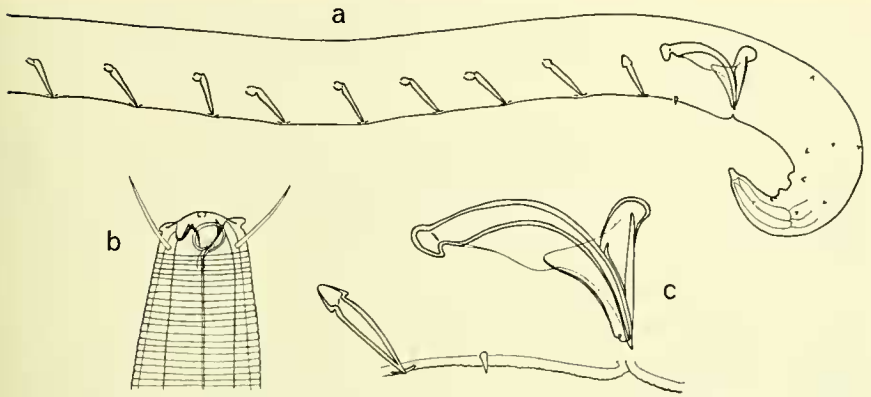

FIG. 3. *Procamacolaimus papillosus* sp. nov. a, Male tail. b, Lateral view of male head. c, Lateral view of spicules, gubernaculum and posterior supplement.

DISCUSSION. Of the four previously-described species *Procamacolaimus papillosus* sp. nov. is closest to *P. dolichostylum* Gerlach, 1953. The latter, however, has shorter cephalic setae, no subventral teeth in the buccal cavity and a differently-shaped gubernaculum.

Family **SPHAEROLAIMIDAE**

Sphaerolaimus crenellatus sp. nov.

(Fig. 4)

MATERIAL STUDIED. 5 ♂♂ and 5 ♀♀ (Syntypes); B.M. (N.H.), Reg. Nos. 1972 : 356–366 (3 ♂♂ and 2 ♀♀ measured below). Additional material: 2 ♂♂ and 15 ♀♀; B.M. (N.H.), Reg. Nos. 1972 : 367–382.

REPRESENTATION. Station 5059.

DE MAN'S RATIOS.

	a	b	c	V %	Body length (mm)
Males	21·47	5·53	9·22	–	2·49
	23·73	5·50	9·31	–	2·42
	25·27	5·47	9·40	–	2·35
Females	23·98	5·78	10·11	65·37	2·83
	27·11	5·76	10·24	62·57	2·765

MEASUREMENTS (in mm in order of body lengths). Males: Body breadth: 0·116; 0·102; 0·093. Oesophagus length: 0·45; 0·44; 0·43. Distance of nerve-ring from anterior: 0·175; 0·19; 0·18. Distance of excretory pore from anterior: 0·27; ?; 0·26. Head diameter: 0·025; 0·028; 0·025. Length of cephalic setae: 0·004 + 0·003; 0·007 + 0·0045; 0·007 + 0·0045. Length of longest subcephalic setae: 0·020; 0·024; 0·024. Length of longest cervical setae: 0·0275; 0·029; 0·033.

Amphid diameter : 0·0125 ; 0·0125 ; 0·012. Body diameter at level of amphids : 0·062 ; 0·057 ; 0·056. Tail length : 0·27 ; 0·26 ; 0·25. Cloacal diameter : 0·072 ; 0·075 ; 0·071. Spicule length : 0·121 ; 0·132 ; 0·1125. Gubernaculum length : 0·049 ; 0·046 ; 0·045.

Females : Body breadth : 0·118 ; 0·102. Oesophagus length : 0·49 ; 0·48. Nerve-ring and excretory pore not visible. Head diameter : 0·033 ; 0·028. Length of cephalic setae : 0·0065 + 0·004 ; 0·007 + 0·004. Length of longest subcephalic setae : 0·025 ; 0·025. Length of longest cervical setae : 0·036 ; 0·037. Amphid diameter : 0·0095 ; 0·010. Body diameter at level of amphids : 0·063 ; 0·063. Tail length : 0·28 ; 0·27. Anal diameter : 0·065 ; 0·061. Distance of vulva from anterior : 1·85 ; 1·73.

Description. The cuticle bears fine transverse striations, and there is no sign of lateral differentiation. The mouth is surrounded by six lip-flaps which are triangular in *en-face* view (Fig. 4d). At the bases of the lips are six minute conical labial papillae. More posteriorly there is a circle of ten cephalic papillae ; the

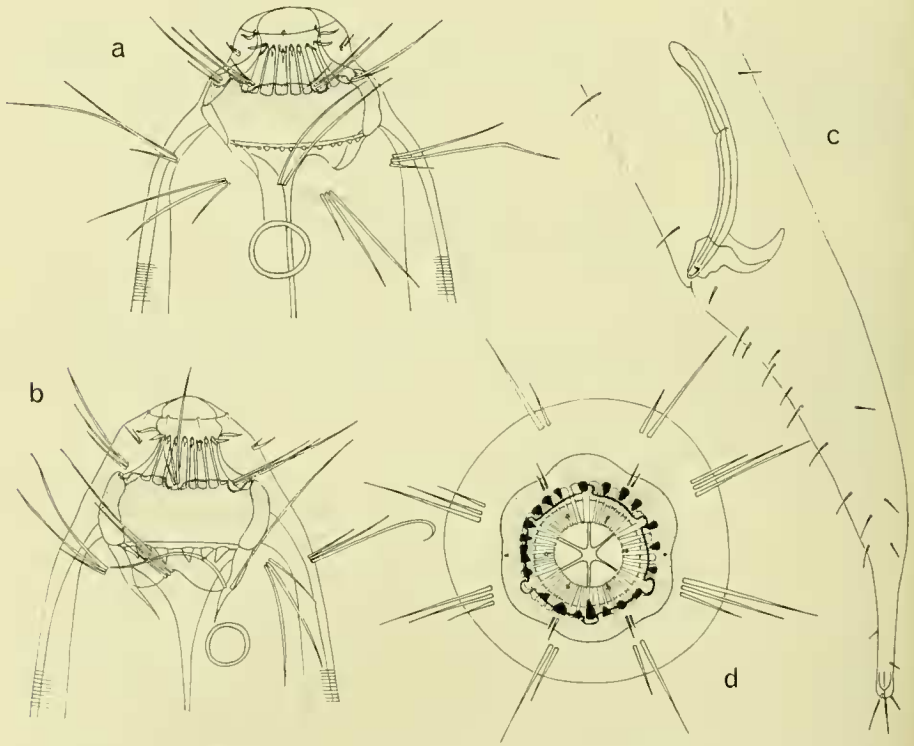

Fig. 4. *Sphaerolaimus crenellatus* sp. nov. a, Lateral view of male head. b, Lateral view of female head. c, Male tail. d, *En-face* view of head.

lateral ones are minute and conical and the submedian pairs longer, subequal and setiform. The subcephalic setae are arranged in eight groups with between two and four setae in each group. These setae are of different lengths, as shown in Figs. 4a, b and d. There are ten groups of cervical setae : eight triplets correspond in position with the cephalic setae and are of unequal length ; two pairs in the lateral positions just anterior to the amphids are of equal length. Eight files of longish setae (but not as long as the cervical setae) extend backwards from the head becoming progressively shorter until they disappear at about the level of the nerve-ring. Setae are scarce on the remainder of the body, becoming more numerous again on the tail, especially that of the male. The mouth opens into a small globular vestible (terminology of Inglis, 1961) which leads by a conical passage bordered by a leaf crown of forty cheilorhabdions to the heavily cuticularized globular buccal cavity. The anterior border of this cavity is indented with six rounded notches. At the posterior end of the buccal capsule there is a ring of buttresses similar to those described by Inglis (1961) for *S. anterides*. However, the buttresses are smaller than in this latter species, and triangular in shape. In both sexes the buttresses may be small and numerous (Fig. 4a) or less numerous and larger (Fig. 4b). They can only be counted accurately in *en-face* view (see 21 buttresses in Fig. 4d). Punctation and sclerotization of the buccal capsule are confined to its anterior half, and do not extend to the buttresses (cf. *S. anterides* where the buttresses are the only sclerotized parts of the buccal capsule). Posterior to the buccal capsule the oesophageal funnel is relatively shallow and bears no teeth, but the ventrolateral sectors of the oesophagus project into the funnel as two muscular lobes. The amphids are circular in outline and are situated wholly posterior to the buccal cavity. They are larger in the male than the female, and this is the only sexual dimorphism shown in the head of this species. The oesophagus is cylindrical with no posterior swelling, and has a thick cuticular lining. The intestine is very opaque. The tail is of similar shape in both sexes, the distal quarter being cylindrical (Fig. 4c).

Male. The spicules are paired and equal. They are divided in the middle by a fine suture, and distally each bears a laterally curving projection. The gubernaculum has a dorsally directed apophysis which for the most part is poorly cuticularized. Because of the opacity of the intestine, the testes are not visible.

Female. There is a single anterior ovary, but the opacity of the intestine again obscures details of its structure. There is no post-vulvar sac. The eggs are roughly spherical, a typical example measuring 0·112 × 0·099 mm. Of three gravid females, all contained only a single egg.

Discussion. A key to the species known at that time is given by Wieser (1956), and Freudenhammer (1970) lists species described subsequently. The present species agrees with *S. gracilis* de Man, 1884, and *S. campbelli* Allgén, 1927, in having the amphids of both sexes wholly posterior to the buccal cavity. It is closest to *S. gracilis* on the basis of the relative lengths of the cephalic and subcephalic setae. Although *S. gracilis* is a very variable species (Lorenzen, 1969, for example describes three distinct forms), none of its varieties has a buttressed cephalic capsule or double-jointed spicules.

Family SIPHONOLAIMIDAE

Siphonolaimus profundus sp. nov.

(Fig. 5)

Material studied. Material in general is rather fragmented. 2 complete ♂♂, 1 headless ♂ and 2 complete ♀♀ (Syntypes); B.M. (N.H.), Reg. Nos. 1972 : 383–386. Additional material : 1 complete ♂, 1 complete ♀, 1 complete juvenile, 7 head ends, 1 ♀ tail end, 1 juvenile tail end, 1 ♀ middle region; B.M. (N.H.), Reg. Nos. 1972 : 387–389.

Representation. Station 5050.

De Man's Ratios.

	a	b	c	V %	Body length (mm)
Males	85·43	19·29	41·24	–	5·98
	61·58	16·14	37·44	–	4.68
	–	–	–	–	headless
Females	72·83	21·61	34·36	71·19	6·70
	60·91	20·30	32·06	71·19	6·70

Measurements (in mm in order of body lengths). Males : Body breadth : 0·070; 0·076; –. Oesophagus length : 0·31; 0·29; –. Length of posterior oesophageal bulb : 0·085; 0·087; –. Breadth of posterior oesophageal bulb : 0·042; 0·041; –. Distance of nerve-ring from anterior : 0·149; 0·134; –. Head diameter : 0·012; 0·012; –. Length of cephalic setae : 0·008 + 0·0025; 0·008 + 0·0025; –. Length of buccal spear : 0·032; 0·032; –. Amphid width : 0·014; 0·014; –. Body diameter at level of amphids : 0·029; 0·028; –. Tail length : 0·145; 0·125; 0·153. Cloacal diameter : 0·046; 0·045; 0·046. Spicule length : 0·079; 0·083; 0·082. Gubernaculum length : 0·025; 0·027; 0·031.

Females : Body breadth : 0·092; 0·11. Oesophagus length : 0·31; 0·33. Length of posterior oesophageal bulb : 0·109; 0·105. Breadth of posterior oesophageal bulb : 0·044; 0·052. Distance of nerve-ring from anterior : ?; 0·145. Head diameter : 0·0125; 0·012. Length of cephalic setae : 0·008 + 0·0025; 0·007 + 0·002. Length of buccal spear : 0·029; 0·036. Amphid width : 0·014; 0·014. Body diameter at level of amphids : 0·028; 0·028. Tail length : 0·195; 0·209. Anal diameter : 0·050; 0·050. Distance of vulva from anterior : 4·77; 4·77. Egg length × breadth : 0·29 × 0·08; 0·265 × 0·08.

Description. The cuticle is marked with fine transverse striations. The head bears a circle of ten cephalic setae, of which four are longer and stouter than the remaining six. Two sets of four short setae are positioned just anterior to and just posterior to the amphids. Setae are scarce on the remainder of the body. The amphids are basically circular in outline, but their margin is considerably expanded along the posterior edge (Fig. 5a), where the amphidal nerve exits. The buccal cavity is typical of the genus, containing a long cuticularized axial spear. The oesophagus is expanded posteriorly into an elongate bulb. The intestine is full of small opaque black granules, as in many other species in the genus. The

tail is conical in both sexes, and in the male bears two files of short subventral setae (Fig. 5c).

Male. The male tail is often tightly coiled, and the spicules in all specimens are extruded. The spicules are paired, equal and arcuate. They have a central list which occupies their proximal two-thirds. The gubernaculum has strongly

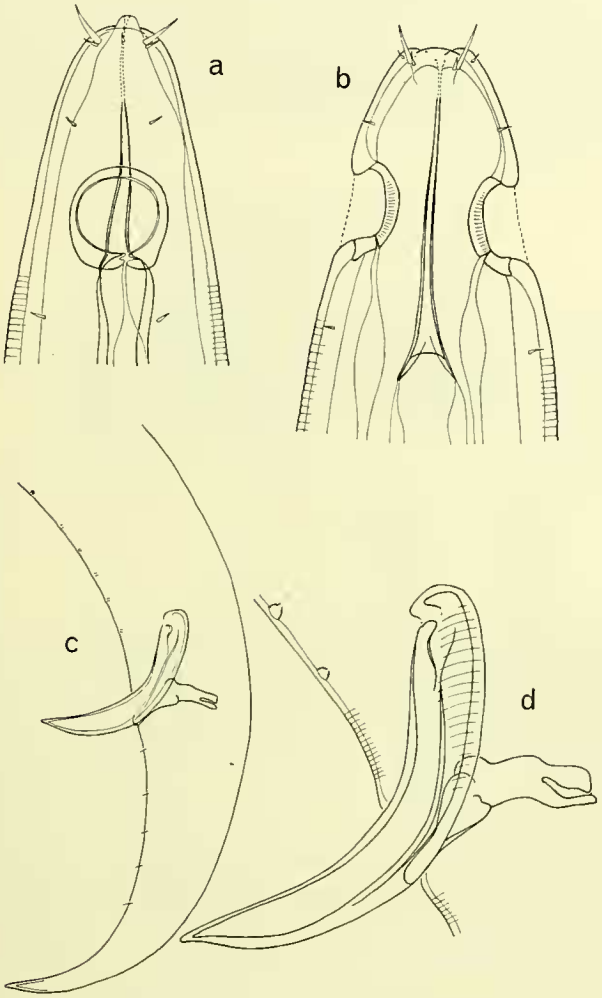

FIG. 5. *Siphonolaimus profundus* sp. nov. a, Lateral view of male head. b, Dorsal view of male head. c, Male tail. d, Lateral view of spicules, gubernaculum and posterior two supplements.

developed dorsal apophyses (Fig. 5d). When the tail is coiled the cuticle for some distance in front of, and a short distance behind, the cloaca is thrown into folds. This obscures the arrangement of the supplements. In the uncoiled tail a series of distinct pre-cloacal supplements is visible. These are small, cup-shaped and weakly cuticularized. They number about 32, are more or less equally spaced, and extend about 5·7 tail lengths in front of the cloaca.

Female. The female has a single anterior outstretched ovary. The uterus contains a single large and elongate egg in all specimens examined.

Discussion. In the form of the amphids, tail and spicules this species appears to be very similar to *S. gladiator* Wieser, 1956. However, this species is much smaller, has only four cephalic setae, a different arrangement of cervical setae, a shorter spear and no supplements.

Family **DESMODORIDAE**

Desmodora masira sp. nov.

(Fig. 6)

Material studied. 3 ♂♂ and 3 ♀♀ (Syntypes); B.M. (N.H.), Reg. Nos. 1972 : 390–395 (2 ♂♂ and 2 ♀♀ measured below). Additional material: 3 ♂♂, 4 ♀♀ and one head end; B.M. (N.H.), Reg. Nos. 1972 : 396–403.

Representation. Station 5059.

De Man's Ratios.

	a	b	c	V %	Body length (mm)
Males	57·40	14·64	10·63	–	2·87
	56·98	14·25	10·98	–	3·02
Females	45·42	14·73	10·55	38·84	3·27
	40·26	14·10	10·03	41·83	3·06

Measurements (in mm in order of body lengths). Males: Body breadth: 0·050; 0·053. Oesophagus length: 0·196; 0·212. Length × breadth of posterior oesophageal bulb: 0·061 × 0·040; 0·064 × 0·045. Head diameter (at level of four long cephalic setae): 0·032; 0·031. Amphid diameter: 0·0075; 0·0085. Length of four long cephalic setae: 0·008; 0·007. Tail length: 0·27; 0·275. Cloacal diameter: 0·038; 0·042. Spicule length: 0·063; 0·068. Gubernaculum length: 0·019; 0·023.

Females: Body breadth: 0·072; 0·076. Oesophagus length: 0·222; 0·217. Length × breadth of posterior oesophageal bulb: 0·069 × 0·043; 0·072 × 0·047. Head diameter: 0·031; 0·033. Amphid diameter: 0·008; 0·008. Length of cephalic setae: 0·0075; 0·007. Tail length: 0·31; 0·305. Anal diameter: 0·031; 0·033. Distance of vulva from anterior: 1·27; 1·28. Egg length × breadth: 0·114 × 0·052; –.

Description. The cuticle is marked with distinct transverse striations between the posterior edge of the cephalic capsule and a short distance from the tail tip. The head is bluntly rounded. There are six very short conical cephalic setae

anterior to the cephalic capsule, and four longer cephalic setae at the anterior border of the capsule. The capsule itself is made of very thick cuticle, and is perforated all over with conspicuous pores. There are small patches of rather opaque sclerotization at the bases of the cephalic setae. The capsule is relatively short, its width being more than twice its height. The amphids are small, and describe a spiral of two turns (Fig. 6a). The buccal cavity is quite small and contains a rather indistinct small pointed dorsal tooth. Six files of short setae extend down the length of the body, these being most numerous in the cervical region and on the male tail. The oesophagus is swollen posteriorly into a pyriform bulb, the cuticular lining of which shows no special thickening. The nerve-ring encircles the oesophagus immediately anterior to this bulb. The tail is relatively long and is evenly tapered throughout its length. The cuticle on the tail tip is clear and unmarked (Fig. 6c).

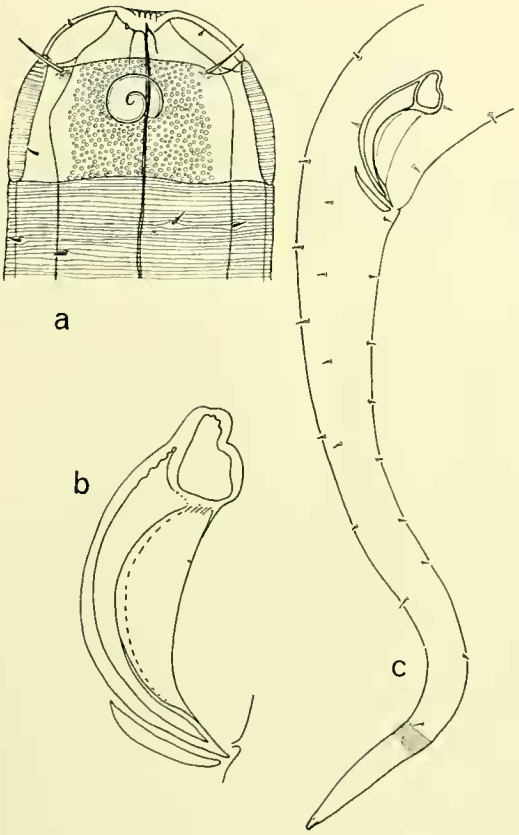

FIG. 6. *Desmodora masira* sp. nov. a, Lateral view of male head. b, Lateral view of spicules and gubernaculum. c, Male tail.

Male. The spicules are paired, equal and arcuate. They are strongly cephalated proximally and pointed distally, with ventral alae (Fig. 6b). The gubernaculum is small and plate-like. There are no pre- or post-cloacal supplements.

Female. The ovaries are paired, symmetrical, opposed and reflexed. The eggs are quite large when only a few are present but there may be up to six in each uterus, and they appear smaller when squashed together. The measurement given above represents the maximum size.

Discussion. Gerlach (1963) has extensively revised the genus *Desmodora*. The present species belongs to group IA in Gerlach's subgeneric key, and can probably be ascribed to the subgenus *Desmodora*, although the cephalic capsule is shorter than in other members of the subgenus. *D. masira* sp. nov. is characterized by the combination of a short broad perforate cephalic capsule, small amphids, a weakly armed buccal cavity, a relatively long tail and the absence of supplements in the male.

Family **COMESOMATIDAE**

Sabatieria alata sp. nov.

(Fig. 7)

Material studied. 2 ♂♂ and 2 ♀♀ (Syntypes); B.M. (N.H.), Reg. Nos. 1972 : 404–407. Additional material: 3 ♀♀ and 4 juveniles; B.M. (N.H.), Reg. Nos. 1972 : 408–414.

Representation. Station 5050.

De Man's Ratios.

	a	b	c	V %	Body length (mm)
Males	52·79	10·06	11·71	–	3·22
	36·99	9·90	11·37	–	3·07
Females	42·71	9·34	10·31	48·16	2·99
	36·10	8·69	10·30	49·28	2·78

Measurements (in mm in order of body lengths). Males: Body breadth: 0·061; 0·083. Oesophagus length: 0·32; 0·31. Distance of nerve-ring from anterior: ?; 0·148. Head diameter: 0·016; 0·0175. Length of longer cephalic setae: 0·005; 0·0055. Amphid diameter: 0·010; 0·011. Body diameter at level of amphids: 0·018; 0·019. Tail length: 0·275; 0·27. Cloacal diameter: 0·051; 0·050. Spicule length: 0·082; 0·090. Gubernaculum length: 0·030; 0·036.

Females: Body breadth: 0·070; 0·077. Oesophagus length: 0·32; 0·32. Distance of nerve-ring from anterior: 0·155; 0·149. Head diameter: 0·019; 0·020. Length of longer cephalic setae: 0·0055; 0·005. Amphid diameter: 0·011; 0·010. Body diameter at level of amphids: 0·020; 0·022. Tail length: 0·29; 0·27. Anal diameter: 0·051; 0·051. Distance of vulva from anterior: 1·44; 1·37.

Description. The cuticle is marked with transverse rows of fine punctations. Laterally the punctations are larger, wider spaced and more irregularly arranged. The mouth is surrounded by six rounded lips each bearing a small conical labial

papilla. Anteriorly there are six short conical cephalic setae, and more posteriorly four longer ones. Cervical setae are short and scattered. The amphids of the male describe a spiral of 3·0–3·2 turns, and those of the female 2·8–3·0 turns. The buccal cavity is simply cup-shaped, and bears no armament (Fig. 7a). The basal third of the oesophagus is slightly expanded, but there is no distinct bulb. The tail is relatively long, with its distal half filiform (Fig. 7b).

Male. The spicules are paired, equal and arcuate. The proximal ends are only slightly cephalate, and from each a median list extends one-third of the way down the length of the spicule. When the spicules are protruded it can be seen that their ventral alae are produced into subterminal pointed projections near the distal ends (Fig. 7c). The gubernaculum bears a pair of pointed lateral projections in

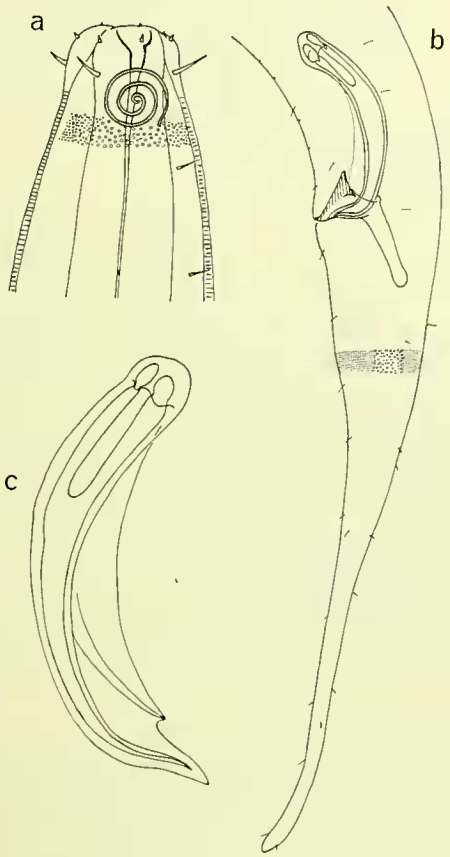

FIG. 7. *Sabatieria alata* sp. nov. a, Lateral view of female head. b, Male tail. c, Lateral view of spicule.

addition to the long round-ended caudodorsal apophyses. There are about 21 very small and inconspicuous pre-cloacal supplements. These consist of simple pores in the cuticle which are rather widely spaced, the anteriormost being approximately two tail lengths in front of the cloaca.

Female. The ovaries are paired, equal, opposed and reflexed.

Discussion. This species is very close to *S. furcillata* Wieser, 1954. However, Wieser's species is smaller, has longer cephalic setae and relatively larger amphids. The spicules of the two species are differently shaped, the median list in *S. furcillata* being half the length of the spicule. Since species within the genus *Sabatieria* are generally separated on small but distinct characters, it is preferable to keep these two species distinct although the differences between them are quite small.

Hopperia muscatensis sp. nov.

(Fig. 8)

Material studied. 1 ♂ and 4 ♀♀ (Syntypes); B.M. (N.H.), Reg. Nos. 1972: 415–419 (only 1 ♂ and 2 ♀♀ measured below).

Representation. Station 5071.

De Man's Ratios.

	a	b	c	V %	Body length (mm)
Male	43·72	8·74	14·14	–	1·88
Females	35·63	9·12	13·99	46·49	2·28
	31·13	8·50	12·85	45·70	2·21

Measurements (in mm in order of body lengths). Male: Body breadth: 0·043. Oesophagus length: 0·215. Distance of nerve-ring from anterior: 0·111. Distance of excretory pore from anterior: 0·129. Head diameter: 0·012. Length of longer cephalic setae: 0·005. Amphid width: 0·010. Body diameter at level of amphids: 0·014. Tail length: 0·133. Cloacal diameter: 0·034. Spicule length: 0·087. Length of gubernacular apophysis: 0·032.

Females: Body breadth: 0·064; 0·071. Oesophagus length: 0·25; 0·26. Distance of nerve-ring from anterior: 0·129; ?. Distance of excretory pore from anterior: 0·142; ?. Head diameter: 0·012; 0·013. Length of longer cephalic setae: 0·007; 0·005. Amphid width: 0·009; 0·008. Body diameter at level of amphids: 0·014; 0·017. Tail length: 0·163; 0·172. Anal diameter: 0·041; 0·042. Distance of vulva from anterior: 1·06; 1·01. Egg length × breadth: –; 0·057 × 0·050.

Description. The cuticle is marked by transverse rows of fine punctations. Lateral differentiation consisting of larger and more widely spaced punctations commences a short distance posterior to the amphids and terminates at the base of the conical portion of the tail. Very coarse lateral dots are present in the cloacal region of the male. The head bears two circles of six labial and six cephalic conical papillae. More posteriorly are four longer cephalic setae. The amphids describe a spiral of 3·1–3·2 turns and are slightly longer than wide. The mouth opens into

a small globular cavity, the walls of which appear to be supported by fine cuticularized rods. More posteriorly the buccal cavity consists of a long heavily cuticularized tube, at the anterior end of which are three (one dorsal and two subventral) solid triangular teeth (Fig. 8a). A few very short scattered cervical, caudal and pre-anal setae are present, these being particularly numerous on the male tail. The oesophagus is swollen slightly towards its base, but there is no distinct bulb. Small cardia link the oesophagus with the intestine. The tail is relatively short, with its distal third filiform. It has a slightly swollen and rounded tip bearing a pair of short terminal setae (Fig. 8b).

Male. The spicules are paired, equal and arcuate. The proximal third contains a median list, and there is a dorsal opening near the proximal tip. Each spicule bears a small tooth ventrally near the distal end (Fig. 8c). The gubernaculum has long slightly curved apophyses with rounded ends. Pre-cloacal supplements in the form of fine cuticular pores are present, but are very indistinct and cannot be enumerated with certainty.

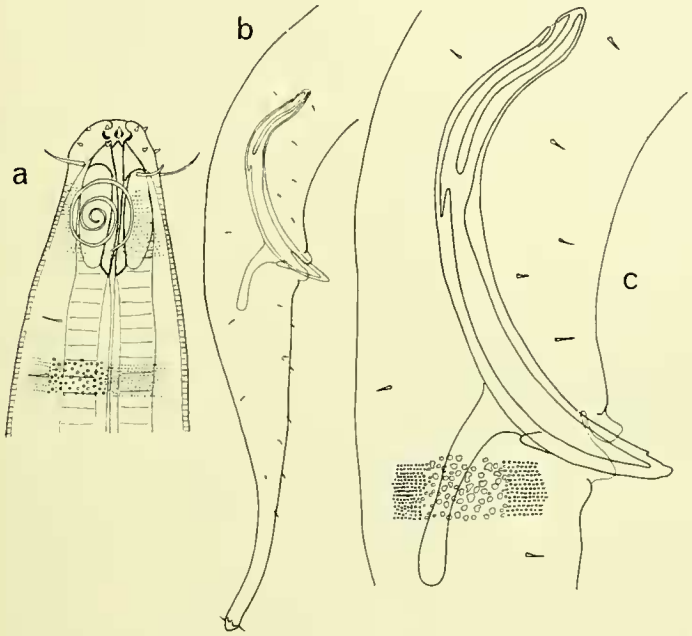

FIG. 8. *Hopperia muscatensis* sp. nov. a, Lateral view of male head. b, Male tail. c, Lateral view of cloacal region of male.

Female. The ovaries are paired and opposed, but do not appear to be reflexed. The posterior ovary is a little longer than the anterior. In the only female which is gravid, the anterior uterus contains two eggs and the posterior uterus three.

Discussion. *Hopperia muscatensis* differs from the type and only other species, *H. massiliensis* Vitiello, 1969, on several points, the chief of which are the longer cephalic setae, the different form of the spicules and the much shorter tail.

Family **LEPTOSOMATIDAE**

Platycomopsis implicatus sp. nov.

(Fig. 9)

Material studied. 1 ♂ (Holotype); B.M. (N.H.), Reg. No. 1972 : 420.

Representation. Station 5025.

De Man's Ratios.

	a	b	c	Body length (mm)
Male	63·61	5·84	48·93	11·45

Measurements (in mm). Male: Body breadth : 0·18. Oesophagus length : 1·96. Distance of nerve-ring from anterior : 0·47. Head diameter : 0·035. Length of cephalic setae : 0·025 + 0·015. Length of longest cervical setae : 0·027. Width of amphidal opening : 0·012. Tail length : 0·234. Cloacal diameter : 0·105. Spicule length : 0·095. Distance of supplement anterior to cloaca : 0·203.

Description. The cuticle is smooth. The mouth is surrounded by three low rounded lips, each bearing a pair of short conical labial papillae. There are ten cephalic setae, six being longer than the remaining four. Just posterior to the amphids on the lateral surfaces of the body are several transverse rows of long stout cervical setae. On the left side from anterior to posterior there are four rows numbering six, three, two and two setae respectively. On the right side there are only three rows, numbering four, three and one setae (Figs. 9a and b). On the dorsal surface there are similarly two rows of four and two long setae, but ventrally there are only two very short conical setae and there is no indication that any longer setae have been lost. More posteriorly there are a few very short setae in the cervical region and on the tail tip, but the middle region of the body is naked. The cephalic capsule is very weakly developed. It takes the form of a narrow band of sclerotization of the inner cuticle surrounding the head, and is only visible in optical section where its curves round the sides of the head. There is virtually no buccal cavity; the mouth opening merges imperceptibly into the lumen of the oesophagus. The amphids are pocket-like, with transverse oval openings. The oesophagus is cylindrical. The tail is conical but has a short cylindrical tip. There is no spinerette and no caudal glands are visible (Fig. 9c).

Male. The spicules are paired, equal and straight with a rather complex folded structure (Fig. 9d). They have funnel-shaped openings at their proximal ends. The gubernaculum is also complex and is folded into a pair of tubes surrounding each spicule. The pre-cloacal supplement comprises a simple mid-ventral papilla pierced by a fine pore from which a duct leads to the interior.

Discussion. Mawson (1956) provides a useful key to the species of this genus. *Platycomopsis implicatus* appears to be closest to *P. dimorphica* Mawson, 1956.

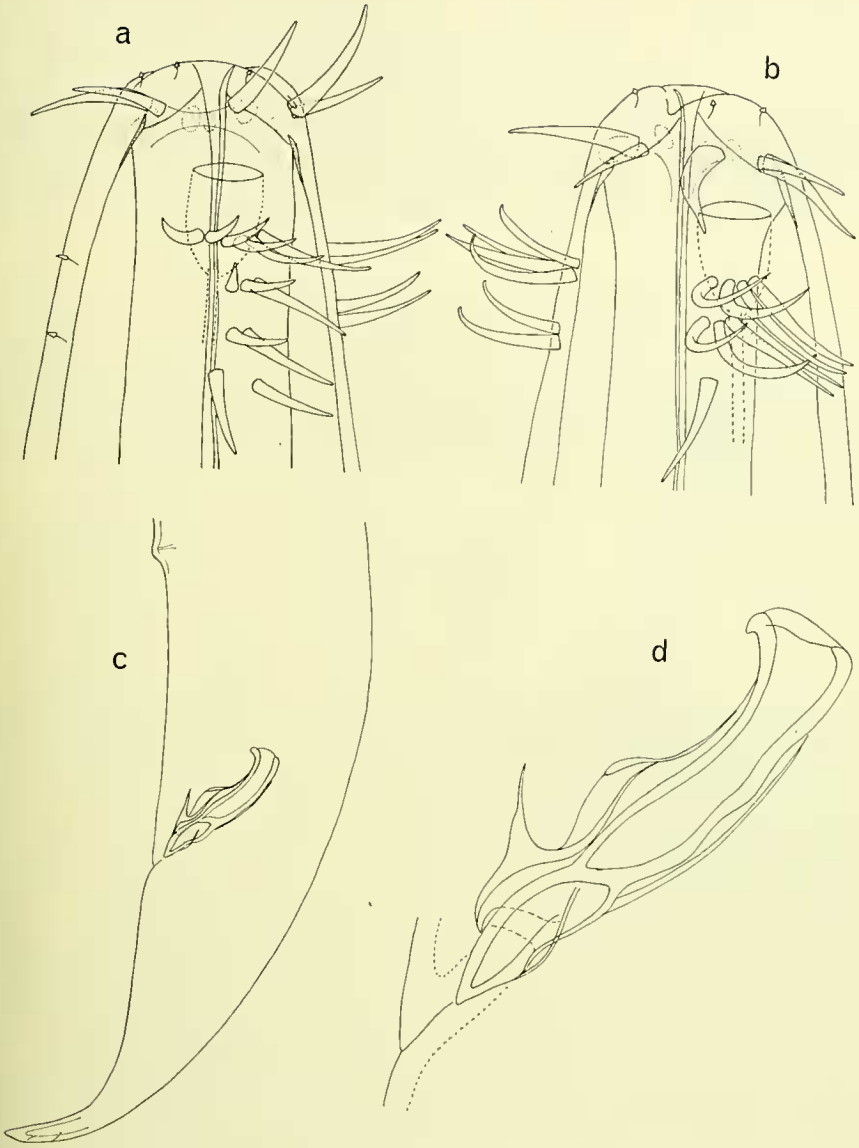

FIG. 9. *Platycomopsis implicatus* sp. nov. a, Male head from left side. b, Male head from right side. c, Male tail. d, Lateral view of spicules and gubernaculum.

This latter species has single long dorsal and ventral cervical setae and the post-amphidal setae are less numerous than in the present species. The aperture of the amphids seems to be very much wider in Mawson's species. She found it difficult to discern the structure of the spicules, because of the thickness of the tail, but in her drawing she shows the spicule narrowing abruptly near the proximal end, and not widening into a funnel-shaped opening. A final point of distinction between the two species is the position of the pre-cloacal supplement. In *P. dimorphica* it is situated less than one spicule length in front of the cloaca, whereas in *P. implicatus* the corresponding distance is more than twice the spicule length.

Synonchus alisonae sp. nov.

(Fig. 10)

Material studied. 3 ♂♂ and 2 ♀♀ (Syntypes); B.M. (N.H.), Reg. Nos. 1972 : 421–425. Additional material: 1 ♂ and 9 juveniles, one of which is beheaded for an *en-face* preparation; B.M. (N.H.), Reg. Nos. 1972 : 426–435.

Representation. Station 5021.

De Man's Ratios.

	a	b	c	V %	Body length (mm)
Males	58·50	7·18	27·86	–	11·70
	47·68	6·28	15·43	–	10·49
	50·15	7·38	13·74	–	10·03
Females	51·60	7·27	14·54	47·67	10·32
	54·26	7·01	13·22	46·07	10·31

Measurements (in mm in order of body lengths). Males: Body breadth: 0·20; 0·22; 0·20. Oesophagus length: 1·63; 1·67; 1·36. Head diameter: 0·043; 0·054; 0·052. Length of cephalic setae: 0·016 + 0·014; 0·018 + 0·017; 0·018 + 0·014. Amphid width: 0·015; 0·014; ?. Tail length: 0·42; 0·68; 0·73. Cloacal diameter: 0·13; 0·13; 0·11. Spicule length: 0·175; 0·181; 0·168. Gubernaculum length: 0·095; 0·078; 0·081. Distance of pre-cloacal supplement from cloaca: 0·134; 0·112; 0·103.

Females: Body breadth: 0·20; 0·19. Oesophagus length: 1·42; 1·47. Distance of nerve-ring from anterior: 0·39; ?. Head diameter: 0·056; 0·054. Length of cephalic setae: 0·017 + 0·013; 0·017 + 0·014. Amphid width: 0·016; 0·015. Tail length: 0·71; 0·78. Anal diameter: 0·10; 0·11. Distance of vulva from anterior: 4·92; 4·75. Egg length × breadth: 0·42 × 0·16; –.

Description. The cuticle is marked with very fine transverse striations. The mouth is bounded by three rounded lips each bearing a pair of small conical labial papillae. Internally the cuticle of each lip is modified into a small transverse bar from which radiate a series of longitudinal striations, becoming progressively shorter towards the interlabial positions (Figs. 10b, c and d). These are similar to the semi-lunar striations (terminology of Inglis, 1964) found in many members of the Enoplidae. There are ten cephalic setae, the submedian pairs being only

slightly subequal in length. The cephalic capsule is relatively narrow and its posterior border is roundly lobed between the cephalic setae. The amphids are pocket-like with oval openings. They are displaced slightly dorsally. There are two or three short post-amphidal setae and a few other short setae scattered posteriorly to about the level of the nerve-ring. The buccal cavity varies in appearance depending on the angle from which it is viewed. It is basically conical and contains a large solid dorsal tooth with a rounded tip. There are no subventral teeth visible. There is no sexual dimorphism shown in the head. The oesophagus is

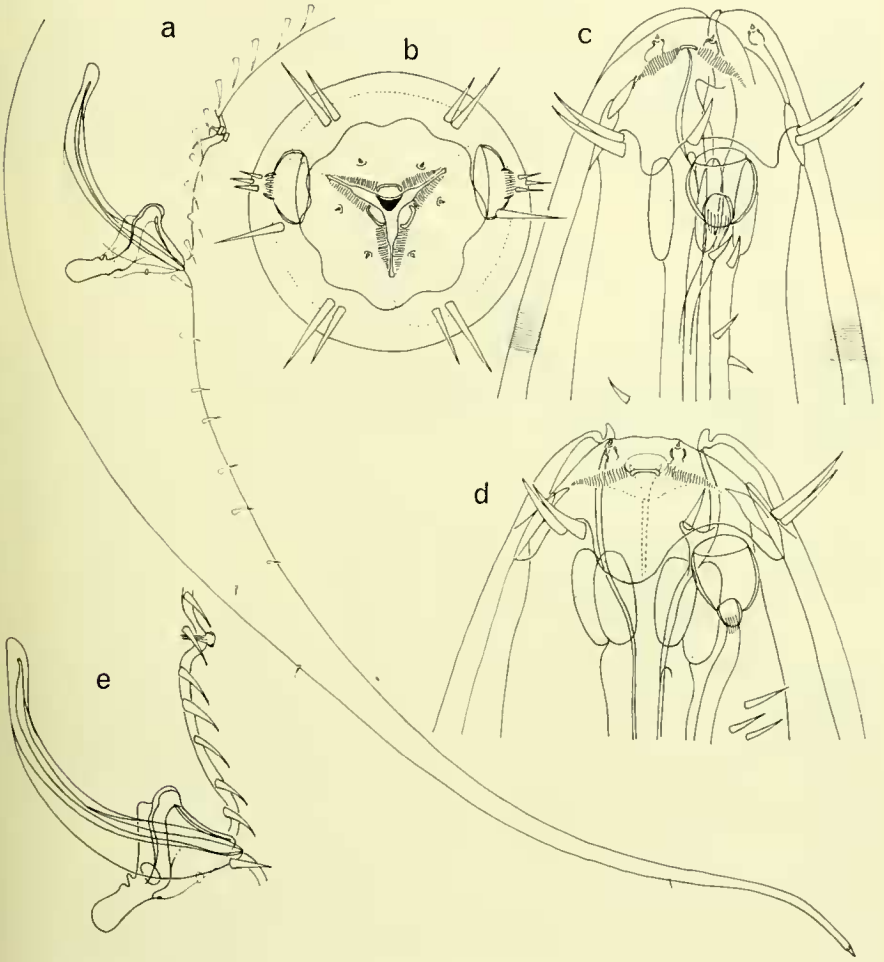

FIG. 10. *Synonchus alisonae* sp. nov. a, Male tail. b, *En-face* view of head. c and d, Heads of two males. e, Lateral view of spicules, gubernaculum and supplements.

cylindrical. The tail in both sexes is filiform with a pointed tip, but varies from 3·2 to 7·1 cloacal or anal diameters in length.

Male. The spicules are paired, equal and arcuate, with no marked proximal cephalization. The gubernaculum is of a complex structure. From the lateral view it has a triangular outline, and bears a solid rounded dorsal apophysis (Fig. 10e). There is a pair of ventral mamilliform supplements a short distance in front of the cloaca. Rows of subventral setae extend anteriorly from the cloaca about four times the supplement–cloaca distance, and posteriorly for some way down the length of the tail (Fig. 10a).

Female. The ovaries are paired, symmetrical and reflexed. The eggs are relatively elongate.

Discussion. This species is characterized by the combination of a long filiform tail and relatively long cephalic setae. It appears to be closest to *S. filicaudatus* (Ditlevsen, 1926), another deep-water species. In Ditlevsen's species, however, the tail and cephalic setae are much shorter, and the gubernacular apophysis is triangular in shape.

Family **PHANODERMATIDAE**

Dayellus dayi Inglis, 1964

(Figs. 11a and b)

Material studied. 13 ♂♂, 18 ♀♀ and 14 juveniles (2 ♂♂ and 2 ♀♀ measured below); B.M. (N.H.), Reg. Nos. 1972 : 436–481.

Representation. Station 5047 : 7 ♂♂, 5 ♀♀ and 7 juveniles. Station 5060 : 6 ♂♂, 13 ♀♀ and 7 juveniles.

De Man's Ratios.

	a	b	c	V %	Body length (mm)
Males	58·04	8·22	27·53	–	5·92
	47·79	8·82	26·19	–	6·26
Females	62·30	10·92	31·74	51·96	8·41
	45·79	9·03	26·71	53·67	6·41

Measurements (in mm in order of body lengths). Males : Body breadth : 0·102 ; 0·131. Oesophagus length : 0·72 ; 0·71. Distance of nerve-ring from anterior : 0·275 ; 0·26. Distance of excretory pore from anterior : 0·058 ; 0·058. Head diameter : 0·012 ; 0·013. Length of cephalic setae : 0·014 + 0·0125 ; 0·016 + 0·0145. Tail length : 0·215 ; 0·239. Cloacal diameter : 0·071 ; 0·075. Spicule length : 0·130 ; 0·135. Gubernaculum length : 0·043 ; 0·045. Supplement length : 0·016 ; 0·018. Distance of supplement from cloaca : 0·036 ; 0·033.

Females : Body breadth : 0·135 ; 0·140. Oesophagus length : 0·77 ; 0·71. Distance of nerve-ring from anterior : 0·267 ; ?. Distance of excretory pore from anterior : ? ; 0·066. Head diameter : 0·013 ; 0·014. Length of cephalic setae : 0·014 + 0·0125 ; 0·015 + 0·013. Tail length : 0·265 ; 0·24. Anal diameter : 0·082 ; 0·060. Distance of vulva from anterior : 4·37 ; 3·44. Egg length × breadth : 0·165 × 0·090 ; –.

DESCRIPTION. The specimens conform exactly to the description provided by Inglis (1964), except that they are slightly smaller in many measurements, particularly the cephalic setae. The largest number of eggs found in any female is 18, 10 in the anterior uterus and 8 in the posterior uterus.

DISTRIBUTION. South Africa, South-east Arabia.

Crenopharynx fringilla sp. nov.

(Figs. 11c, d and e)

MATERIAL STUDIED. 9 ♂♂, 10 ♀♀ and 12 juveniles.

REPRESENTATION. Station 5047 : 7 ♂♂ and 2 ♀♀ (Syntypes); B.M. (N.H.), Reg. Nos. 1972 : 482–490 (only 3 ♂♂ and 2 ♀♀ measured below). Additional material : 7 ♀♀ and 12 juveniles; B.M. (N.H.), Reg. Nos. 1972 : 491–509. Station 5060 : 2 ♂♂ and 1 ♀; B.M. (N.H.), Reg. Nos. 1972 : 510–512.

DE MAN'S RATIOS.

	a	b	c	V %	Body length (mm)
Males	32·34	4·76	15·51	–	5·66
	39·79	4·57	15·47	–	5·57
	40·00	4·63	14·74	–	5·60
Females	36·22	5·13	15·90	54·14	6·52
	34·63	4·63	15·48	56·23	6·58

MEASUREMENTS (in mm in order of body lengths). Males : Body breadth : 0·175 ; 0·14 ; 0·14. Oesophagus length : 1·19 ; 1·22 ; 1·21. Distance of nerve-ring from anterior : 0·42 ; 0·44 ; 0·44. Head diameter : 0·019 ; 0·019 ; 0·019. Length of cephalic setae : 0·018 + 0·014 ; 0·015 + 0·012 ; ?. Tail length : 0·365 ; 0·36 ; 0·38. Cloacal diameter : 0·068 ; 0·064 ; 0·073. Spicule length : 0·345 ; 0·36 ; 0·37. Gubernaculum length : 0·081 ; 0·078 ; 0·095.

Females : Body breadth : 0·18 ; 0·19. Oesophagus length : 1·27 ; 1·42. Distance of nerve-ring from anterior : 0·43 ; 0·48. Head diameter : 0·019 ; 0·021. Length of cephalic setae : ? ; 0·017 + 0·014. Tail length : 0·41 ; 0·425. Anal diameter : 0·073 ; 0·075. Distance of vulva from anterior : 3·53 ; 3·70.

DESCRIPTION. The cuticle is smooth. The neck region is strongly tapered so that the head is relatively small. The head structure is exactly as described for other members of the genus by Inglis (1964). The cephalic capsule is lightly built with a lobed posterior margin, and the anterior end of the oesophagus projects anteriorly as three lobes (Fig. 11e). The cuticle supporting the six labial papillae which surround the mouth is sclerotized into crescentic areas. The ten cephalic setae are situated at the posterior edge of the cephalic capsule, six being slightly longer than the remaining four. A few scattered setae are present on the anterior end of the body, extending back about one-third of the oesophagus length. Setae are scarce on the middle of the body, but become more numerous again on the tail. The oesophagus is strongly tapered in association with the attenuation of the neck region, and becomes cellular posterior to the nerve-ring. The tail is elongate, with its distal end flagellate (Fig. 11c).

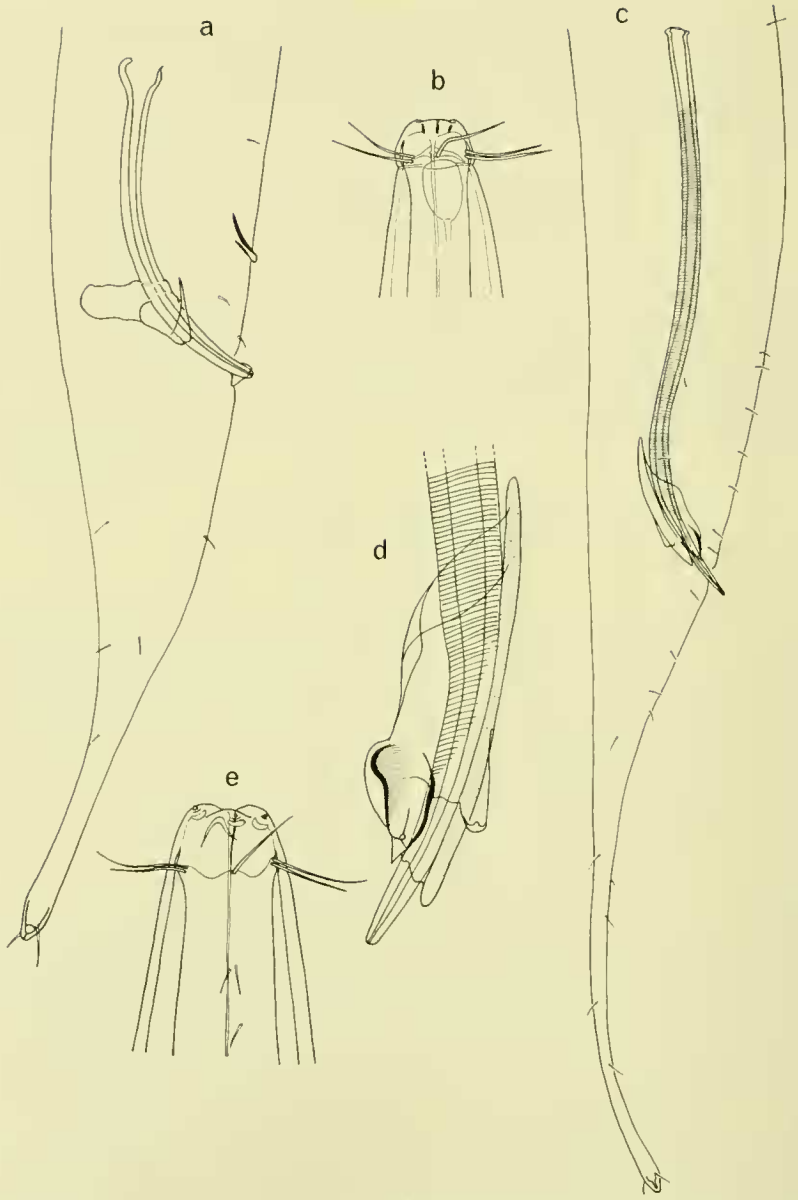

FIG. 11. *Dayellus dayi* Inglis, 1964. a, Male tail. b, Lateral view of male head. *Crenopharynx fringilla* sp. nov. c, Male tail. d, Lateral view of gubernaculum and distal end of spicules. e, Lateral view of male head.

Male. The spicules are elongate, paired and equal. They are slightly cephalate proximally and pointed distally. They are transversely striated for most of their length, except for short clear zones at the distal and proximal ends. Their ventral edges are not modified by any barbs or swellings. The gubernaculum has a complex folded structure and bears a pair of extensive lateral pieces terminating in sharp points (Fig. 11d). There is no pre-cloacal supplement.

Female. The ovaries are paired, equal, opposed and reflexed. One of the females not measured above contains three eggs in each uterus, a typical example measuring 0·216 × 0·097 mm.

Discussion. This species is characterized by the combination of a long flagellate tail, spicules with no barbs or other modifications, and a gubernaculum with pointed lateral pieces. *C. crassus* (Ditlevsen, 1930) and *C. afra* Inglis, 1964, appear to be most nearly related to *C. fringilla*, but neither has the above combination of characters.

Family **ENOPLIDAE**

Mesacanthion southerni sp. nov.

(Figs. 12 and 13a and c)

Material studied. 1 ♂ and 3 ♀♀ from Station 5034; 2 ♂♂ from Station 5047 (Syntypes); B.M. (N.H.), Reg. Nos. 1972 : 513–518. Additional material: 3 ♂♂ and 2 juveniles from Station 5047; B.M. (N.H.), Reg. Nos. 1972 : 519–523. Setae of specimens from Station 5047 are generally damaged.

Representation. Station 5034 : 1 ♂ and 3 ♀♀. Station 5047 : 5 ♂♂ and 2 juveniles.

De Man's Ratios.

	a	b	c	V %	Body length (mm)
Males	33·91	5·57	14·44	–	3·90
	32·10	5·81	14·65	–	3·37
	32·80	?	14·91	–	3·28
Females	25·88	5·37	12·57	50·91	4·40
	29·82	5·51	13·70	51·28	5·07

Measurements (in mm in order of body lengths). Males: Body breadth: 0·115; 0·105; 0·100. Oesophagus length: 0·70; 0·58; ?. Distance of nerve-ring from anterior: 0·23; ?; ?. Head diameter: 0·033; 0·035; 0·035. Length of labial setae: 0·012; ?; ?. Length of lateral cephalic setae: 0·057; ?; ?. Length of submedian cephalic setae: 0·048 + 0·039; ?; ?. Tail length: 0·27; 0·23; 0·22. Cloacal diameter: 0·060; 0·055; 0·053. Length of right spicule: 0·32; 0·29; 0·30. Length of left spicule: 0·080; 0·067; 0·078. Length of gubernacular apophysis: 0·051; 0·045; 0·040. Length of supplement: 0·040; 0·034; 0·032. Distance of supplement anterior to cloaca: 0·100; 0·098; 0·082.

Females: Body breadth: 0·17; 0·17. Oesophagus length: 0·82; 0·92. Distance of nerve-ring from anterior: 0·26; 0·27. Head diameter: 0·039; 0·041. Length of labial setae: 0·013; 0·012. Length of lateral cephalic setae: 0·48; ?.

Length of submedian cephalic setae : 0·046 + 0·038 ; 0·038 + 0·033. Tail length : 0·35 ; 0·37. Anal diameter : 0·062 ; 0·068. Distance of vulva from anterior : 2·24 ; 2·60. Egg length × breadth : – ; 0·20 × 0·11.

Description. The cuticle is marked internally with faint transverse striations. The neck region tapers considerably from the base of the oesophagus : it is highly setose in the male (Fig. 13c), but only a few short scattered setae are present in the female. The head is typical of the genus. The three lips are relatively low. The lateral cephalic setae are slightly longer than the longer setae of each submedian pair. The cephalic capsule is punctate and deeply incised, with the cephalic setae situated at its anterior end (Fig. 12a). The mandibles have the usual appearance of two lateral rods united by an anterior curved bar. The three onchia are relatively large, and are equal in size. The oesophagus broadens considerably towards its base, but there is no posterior bulb. The tail is more or less evenly tapered throughout its length in both sexes (Fig. 13a).

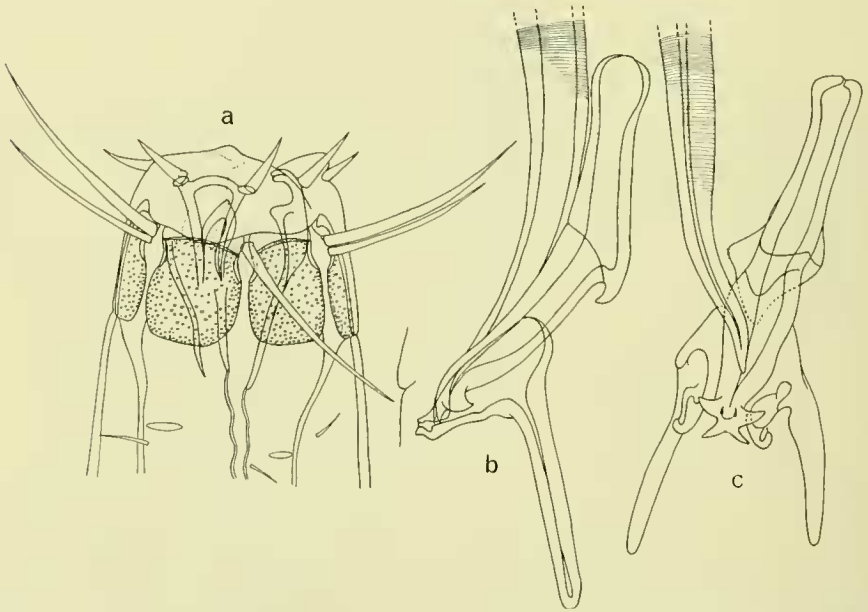

Fig. 12. *Mesacanthion southerni* sp. nov. a, Lateral view of female head. b, Lateral view of gubernaculum, left spicule and distal end of right spicule. c, Ventral view of gubernaculum, left spicule and distal end of right spicule.

Male. The spicules are asymmetrical. The right is elongate and transversely striated for most of its length, except near the distal and proximal ends (Fig. 13a). The left is short and smooth and is built in two halves with a fine suture between them. The proximal half bears a strong dorsal hook at its distal end, and the

distal half terminates in four outwardly curving teeth (Figs. 12b and c). The gubernaculum is in two halves, each with an elongate posterior apophysis. The supplement is a simple cuticularized tube situated about half the right spicule length in front of the cloaca.

Female. The ovaries are paired, symmetrical, opposed and reflexed. The gravid specimen contains only one egg per uterus.

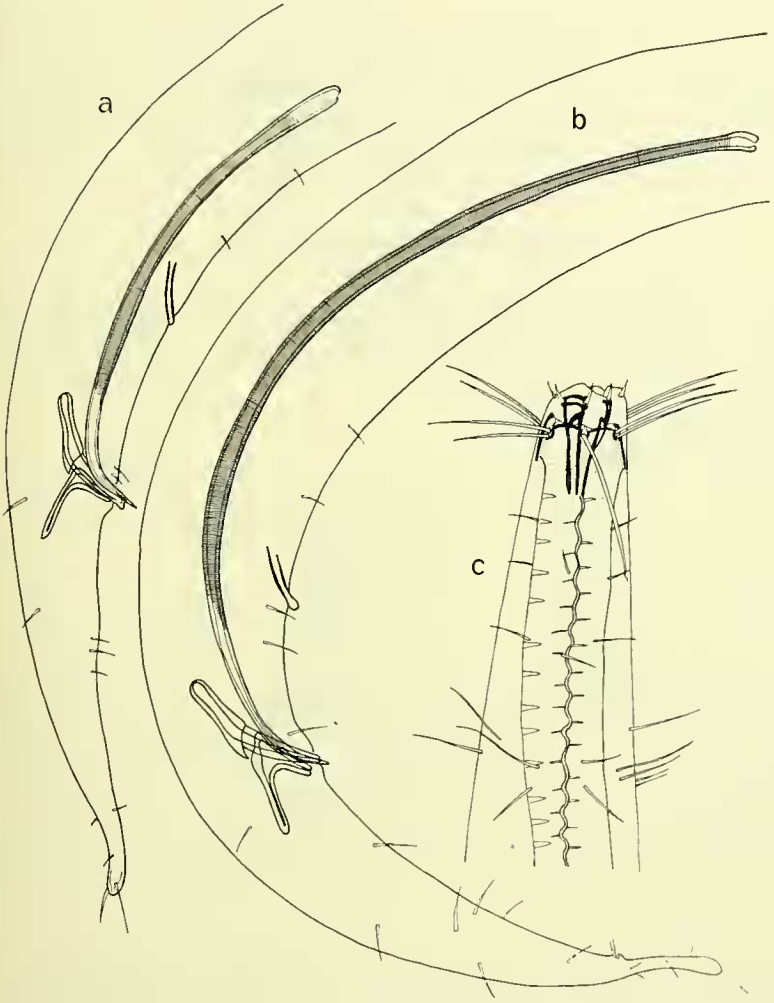

FIG. 13. *Mesacanthion southerni* sp. nov. a, Male tail. c, Anterior end of male. *Mesacanthion diplechma* (Southern, 1914). b, Male tail (drawn to same scale as a).

Discussion. Because of the close similarity of the male reproductive complex, these specimens were at first assigned to *M. diplechma* (Southern, 1914). The spicular apparatus of this species has been redescribed by Ditlevsen (1934). However, close comparison with specimens of *M. diplechma* from the North Sea off Northumberland (Station A of Warwick and Buchanan, 1970) have revealed several differences which warrant specific rank. The male tail of *M. diplechma*, drawn from a North Sea specimen (B.M. (N.H.), Reg. No. 1972 : 538) is illustrated for comparative purposes in Fig. 13b. It will be noted that the right spicule of *M. diplechma* is much more elongate (0·54 mm in the illustrated specimen), so that the distance between the supplement and cloaca is less than a quarter of the right spicule length. *M. diplechma* bears a ventral setose papilla near the tail tip, which is absent in *M. southerni*. Another point of distinction is that the distal tip of the short spicule of *M. diplechma* bears three teeth (a point on which Southern and Ditlevsen agree), whereas *M. southerni* has four.

Mesacanthion arabium sp. nov.

(Fig. 14)

Material studied. 3 ♂♂ and 3 ♀♀ (Syntypes); B.M. (N.H.), Reg. Nos. 1972 : 524–529. Additional material : 1 ♂ and 7 ♀♀; B.M. (N.H.), Reg. Nos. 1972 : 530–537.

Representation. Station 5034.

De Man's Ratios.

	a	b	c	V %	Body length (mm)
Males	31·25	4·81	18·38	–	6·25
	37·00	4·93	16·91	–	5·92
	30·42	5·21	16·06	–	5·78
Females	33·42	5·16	16·71	53·07	6·35
	38·76	4·81	17·34	52·05	6·59
	32·85	4·94	16·85	51·45	6·57

Measurements (in mm in order of body lengths). Males : Body breadth : 0·20 ; 0·16 ; 0·19. Oesophagus length : 1·30 ; 1·20 ; 1·11. Distance of nerve-ring from anterior : 0·32 ; 0·32 ; 0·28. Head diameter : 0·080 ; 0·080 ; 0·082. Length of labial setae : 0·025 ; 0·023 ; 0·024. Length of cephalic setae : 0·056 + 0·032 ; 0·065 + 0·030 ; 0·058 + 0·027. Length of cervical setae : 0·034 ; 0·029 ; 0·032. Tail length : 0·34 ; 0·35 ; 0·36. Cloacal diameter : 0·092 ; 0·090 ; 0·092. Spicule length : 0·60 ; 0·61 ; 0·57. Gubernaculum length : 0·126 ; 0·127 ; 0·120. Supplement length : 0·062 ; 0·059 ; 0·058. Distance of supplement anterior to cloaca : 0·23 ; 0·225 ; 0·22.

Females : Body breadth : 0·19 ; 0·17 ; 0·20. Oesophagus length : 1·23 ; 1·37 ; 1·33. Head diameter : 0·085 ; 0·085 ; 0·086. Length of labial setae : 0·024 ; 0·024 ; 0·024. Length of cephalic setae : 0·052 + 0·023 ; 0·055 + 0·027 ; 0·055 + 0·026. Tail length : 0·38 ; 0·38 ; 0·39. Anal diameter : 0·083 ; 0·080 ; 0·081. Distance of vulva from anterior : 3·37 ; 3·43 ; 3·38.

DESCRIPTION. The cuticle is smooth. The head is dome-shaped and the three lips relatively low. The four shorter cephalic setae are only about half the length of the remaining six. The cephalic capsule is deeply incised, with the cephalic setae situated at its anterior end (Fig. 14b). The posterior lobes of the capsule are lightly punctated. The mandibles are similar to those of the previous species, but much more heavily built. Their outer surface is sculptured with a series of

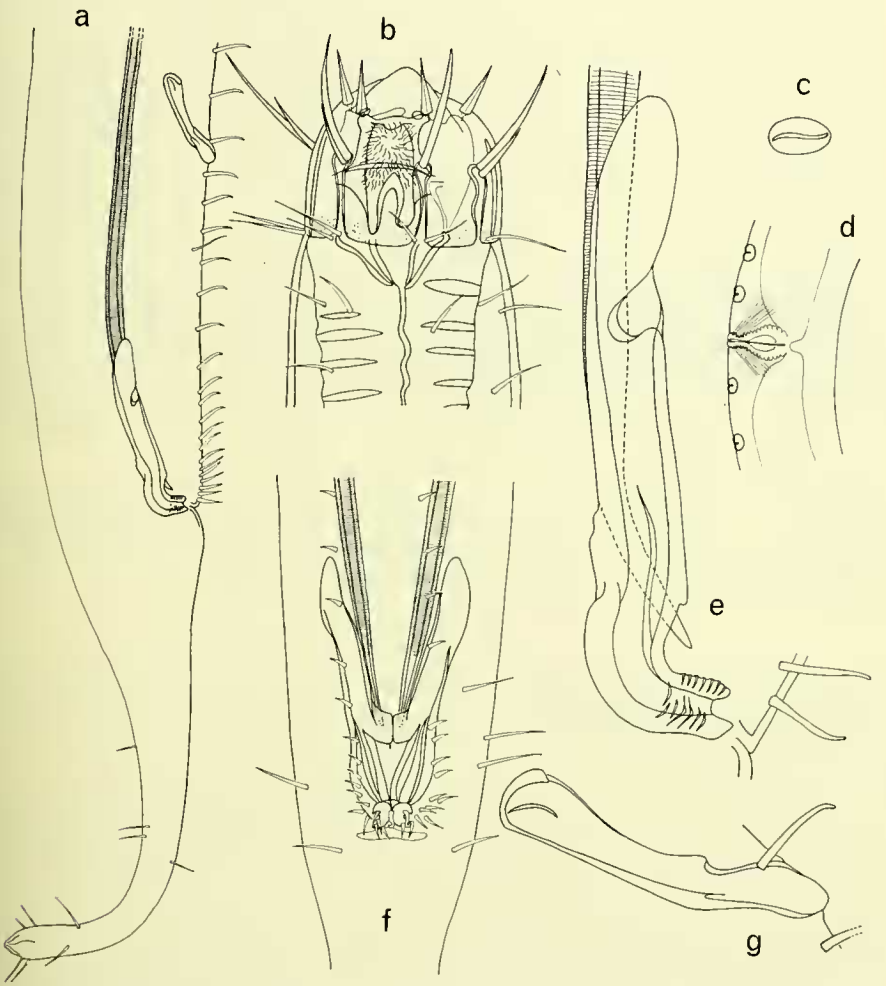

FIG. 14. *Mesacanthion arabium* sp. nov. a, Male tail. b, Lateral view of male head. c, Ventral view of vulvar organ of female. d, Lateral view of female vulvar region. e, Lateral view of gubernaculum and distal tip of spicules. f, Ventral view of male cloacal region. g, Lateral view of male pre-cloacal supplement.

short radiating lines. The onchia are equal in size, relatively smaller than in the previous species. The male bears a pair of cervical setae at the base of each incision of the capsule (i.e. 12 setae in all), and setae approximately the same length as the cervicals extend backwards from the head in six files approximately to the level of the nerve-ring. The paired cervicals and other setae are absent in the female. The oesophagus is cylindrical. The posterior half of the tail is cylindrical (Fig. 14a). In one female the three caudal glands extend 0·53, 0·63 and 0·77 mm in front of the anus.

Male. The spicules are elongate, and transversely striated along most of their length. The proximal tips (not illustrated) are non-cephalate. The gubernaculum consists of a pair of L-shaped pieces united in the middle by ventral strips (Figs. 14e and f). The distal ends bear a series of raised ridges. The supplement is a cuticularized tube of rather more complex structure than in most other members of the genus (Fig. 14g). Two subventral files of stout setae are present between the cloaca and the proximal tips of the spicules. They become more numerous near the cloaca.

Female. The ovaries are paired, symmetrical, opposed and reflexed. No specimens contain fertilized eggs. Transversely oval apparently glandular structures are present ventrally anterior and posterior to the vulva in eight of the ten available specimens. These are very prominent and open by long transverse slits (Figs. 14c and d). They probably aid adhesion to the male during copulation. They may be up to five in number, the distribution in the ten specimens being as follows :

anterior to vulva :	3	2	2	2	1	1	1	1	0	0
posterior to vulva :	2	2	2	1	2	1	1	1	0	0

Discussion. This species is characterized by the elongate spicules, the structure of the gubernaculum, the arrangement of cervical and cloacal setae and the organs associated with the vulva. In this latter feature it is unique.

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